

WHAT IS CLAIMED IS:

1. A method of aligning two optical wireless links, comprising:

detecting the alignment of a first modulated light beam and generating a first alignment feedback signal, the first modulated light beam having been  
5 transmitted by a first optical wireless link;

transmitting the first alignment feedback signal to the first optical wireless link over a second modulated light beam;

detecting the alignment of the second modulated light beam and generating a second alignment feedback signal; and

10 transmitting the second alignment feedback signal over the first modulated light beam.

2. The method of claim 1 further comprising:

adjusting the alignment of the first modulated light beam in response to the first alignment feedback signal; and

15 adjusting the alignment of the second modulated light beam in response to the second alignment feedback signal.

3. The method of claim 1 further comprising formatting the first and second alignment feedback signals as packets of data and inserting the first and second alignment feedback signals into first and second data streams,  
20 respectively, traveling over said first and second modulated light beams respectively.

4. The method of claim 1 wherein the first and second alignment feedback signals include x and y positions for the first and second modulated light beams, respectively.

5. The method of claim 1 wherein said steps of detecting comprise  
5 comparing the relative intensity of the light beam at a plurality of photodetectors.

6. The method of claim 1 wherein said steps of transmitting comprise transmitting data using a 100 Mb/s Ethernet protocol.

7. The method of claim 1 further comprising:

10 extracting said first alignment feedback signal from a data stream transmitted over said second modulated light beam; and

extracting said second alignment feedback signal from a data stream transmitted over said first modulated light beam.

8. The method of claim 7 wherein said first and second alignment feedback  
15 signals are transmitted as control packets and said extracting steps comprise detecting a destination address within said control packets.

9. An optical wireless link comprising:

a photodetector configured to receive a modulated light beam;

the modulated light beam conveying data;

a control circuit coupled to the photodetector, the control circuit

5 receiving the data conveyed by the modulated light beam, and

extracting therefrom embedded control information;

a processor coupled to the detector and receiving therefrom the control information and generating in response thereto beam alignment signals;

10 a beam transmitter coupled to the processor and receiving therefrom the beam alignment signals;

the beam transmitter adjusting alignment of a light beam in response to the beam alignment signals.

10. The optical wireless link of claim 9 further comprising:

15 a servo detector adjacent the photodetector and configured to detect light intensity information; and

a control information generator coupled to the servo detector and configured to generate control information from the light intensity information received from the servo detector; and wherein

20 the control circuit embeds the control information into data to be conveyed by the beam transmitter.

11. The optical wireless link of claim 9 wherein said conveyed data is formatted as data packets and wherein the control information is formatted as control packets interspersed with the data packets.

5 12. The optical wireless link of claim 11 wherein said control logic comprises a switch configured to detect control information on the basis of a destination address contained within the control packet.

13. The optical wireless link of claim 11 wherein the data packets are Ethernet frames and wherein the control packets are SubNetwork Access Protocol packets.

10 14. The optical wireless link of claim 10 wherein the optical wireless device receives control information relating to alignment of its beam transmitter and generates control information relating to alignment of a remote optical wireless link.

15. A method of receiving information at an optical detector comprising:

receiving optical information at an optical detector;

converting the optical information into electrical information;

determining whether the electrical information is control information;

5 adjusting an optical transmitter based on the control information.

16. The method of claim 15 further comprising passing the electrical information to a destination device.

17. The method of claim 15 wherein the step of adjusting an optical transmitter comprises adjusting the alignment of a light beam.

10 18. The method of claim 15 wherein the optical information is transmitted on a modulated, collimated light beam.

19. The method of claim 15 wherein the optical information comprises data to be conveyed to a data sink / source and control information.

15 20. The method of claims 15 wherein the step of receiving the optical information comprises detecting a modulated light beam with a photodetector.

21. The method of claim 15 wherein the step of determining whether the electrical information is control information comprises reading the destination address of the electrical information.

22. A system for communicating a data stream between a first and second data devices comprising:

a first data source / sink generating a stream of data packets;

a first optical wireless device coupled to receive the stream of data packets

5 from the first data source / sink and including:

a switch configured to receive the stream of data packets and to insert therein alignment control packets;

a light beam transmitter coupled to the switch and configured to transmit the stream of data packets and control packets on a modulated light beam;

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a second optical wireless device comprising:

a photodetector configured to receive the modulated light beam;

a second switch configured to receive the stream of data packets and control packets from the photodetector and to extract therefrom the control packets;

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a second light beam transmitter; and

a light beam transmitter alignment unit coupled to the second light beam transmitter and configured to align the second light beam transmitter in response to the control packets; and

20 a second data source / sink coupled to the second optical wireless device and receiving therefrom the stream of data packets.

23. The system of claim 22 wherein at least one of the first data source / sink and the second data source / sink is a computer network.

24. The system of claim 22 wherein at least one of the first data source / sink is a telephone.

5 25. The system of claim 22 wherein at least one of the first data source / sink is a computer.